

INNOVATION IN COLLABORATION FOR BELGIAN BUILDING PROCESSES

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Abstract

Today in many of our neighbouring countries ‘working together in integrated project teams’, using groupware and BIM, is the future way of process thinking in the building practice. Everyone is convinced that ‘teams outperform individuals’! Especially when diverse skills, judgement and experiences can enhance the project’s outcome.

This paper contains the first phase of a comparative study of IPD processes, ways of enhanced collaboration and communication between the different stakeholders in the supply chain of projects abroad, to solve the problems occurring in traditional construction processes used in Belgium. Before the search for solutions can start several questions need an answer first. ‘Which types of building processes are being applied in Belgium today? From which problems do stakeholders suffer? Do all stakeholders understand the problems? Why do Belgians keep following these traditional processes? Are they already aware of the progress in innovative processes made in our neighbouring countries? Is there economical, professional, legal or political support for them?’

Keywords: innovation, collaboration, integration, comparative, Belgium

INTRODUCTION

This paper is written as a part of a PhD research. The first phase of this research contains an exploratory study to be able to clearly define the problems occurring in the traditional Belgian building processes. The aim of the PhD research is making a comparative study of diverse integrated building processes, ways of enhanced collaboration and communication between the different stakeholders in the supply chain of projects abroad, to solve the problems of the traditional construction processes at home.

RESEARCH QUESTION

Integration

Today in many of our neighbouring countries ‘working together in integrated project teams’, using groupware and BIM, is the future way of process thinking to achieve best practice in building. Everyone is convinced that ‘teams outperform individuals’! (Wright, 2009) Especially when diverse skills, judgement and experiences can enhance the project’s outcome. (Katzenbach, 1993) In the process of integrated project delivery (IPD) people, systems, business structures and practices are integrated into a process that collaboratively harnesses the talents and insights of all participants to optimize project results, increase value to the owner, reduce waste and maximize efficiency through all phases of design, fabrication and construction. (AIA, 2007) The integrated team has to be formed at the inception of the project. Next to the owner and the advising architect, the contractor is also involved from the first draft of the design on. He is often individually invited from the architect’s former experiences. The contractor contributes through his knowledge of materials, details,

managing and timing the execution phase, and he advises the project team concerning technical and financial feasibility. This results in the best quality/cost combination for the project. There exists a continuous communication between all the team members, which will lead to improved learning, more informed decision making and increased effectiveness. The building information is non-stop shared through new ICT tools. Working intensively together will result in a lower cost, earlier delivery and higher quality within the scope agreed at the outset of the project. All team members will probably need to sacrifice a part of their own interests, they will have to make trade-offs to reach the overall goal of the project (Bovens, 2009a). Everyone has to share in the risks, through intensive meetings the uncertainties are defined and the best owner will be selected. At the same time they share in the profits as well, the better they work together, the more risks they can avoid or transfer, the greater the shared potential profits will be at the end. This is the ultimate way of stimulating ownership and commitment of all the stakeholders. Transparency among the partners involved is the key to success.

Tradition

Nevertheless building partners in Belgium stick to the traditional design-bid-build method, in which the responsibilities of assigning, designing and executing are strictly divided and follow each other chronologically (Bruggeman et al., 2010). In this way of procuring, lots of problems occur. Experience learns that every day, projects suffer from overruns in time and costs and perform under quality. The stakeholders can't cope with the new prescriptions in terms of sustainability, energy-efficiency and whole life performance. Poor communication between the stakeholders makes it all even worse. The more parties involved in the building process, the more information that gets lost during design and execution, the more risks occur. Mistrust is growing. Incentives to create involvement and ownership and to perform more efficiently are lacking.

A belief

All the positive elements of integration in construction processes cited above can never be part of exact science, it's more a belief. However it is interesting to examine whether this belief in integration could bring solutions for the problems encountered in the Belgian building processes. Before this search for solutions can start several questions need an answer first. 'Which types of building processes are being applied in Belgium today? From which problems do stakeholders suffer? Do all stakeholders understand the problems? Why do Belgians keep following these traditional processes? Are they already aware of the progress made in our neighbouring countries? Do they plan any action in the future? Is there economical, professional, legal or political support for the stakeholders involved in projects?' Subsequent to the questions concerning the Belgian situation being answered, this belief in integration abroad enquires for a critical view. What is stated in literature, 'Working in integrated project teams is necessary to achieve best practice!' (see paragraph 1) will need further investigation in a second phase of the PhD research to verify whether integration is already implemented in building practice abroad or is still only theory.

EXPLORATORY STUDY

To be able to clearly define the problems occurring in the Belgian building processes, two methodologies were applied. With the questions listed in the previous paragraph a questionnaire was drawn up to base interviews on among the different stakeholders in the construction process. Together with an analysis of the existing literature in Belgium on the

implemented processes today in construction, a clear picture of the organisation of building projects in Belgium is established.

Implemented processes

Traditional

The traditional building process of design, bid, build is still the overall used process in Belgium. In this building process the owner (customer or developer as representative of the end-users) has thoughts, needs and requirements concerning a project that he/she would like to execute on a certain site (Bruggeman et al., 2010). In Belgium an owner will begin by searching for an architect, to discuss his plans with, to get the brief of the project clear. Important in choosing an architect is selecting and appointing one, whose ideas or maybe already his/her first design meets in a substantial way with the outcomes the owner has in mind, this to spare time. When owner and architect have reached an agreement on the design, the architect can finish the drawings and prepares all the documents to acquire the building permission from the authorities. While waiting for the building permission to return the architect starts making a bill of quantities together with a description of the building specifications of the project. With these documents the procurement can start. General contractors can bid for the whole job or subcontractors are bidding for separate packages. After a certain period the bidding procedure will be finished and the offers can be compared (Van der Heyden, 2010). During the design phase the architect made several estimations of the building cost, based on studies he made or asked for, to assure the project is designed within the owner's budget. The contractor with the best quality/cost combination will be assigned for the project. When the building permission is delivered by the authorities, the execution on site can start. The architect will plan, manage and inspect the construction phase, because he will be partly responsible for the outcomes to be achieved within time, cost, quality and scope.

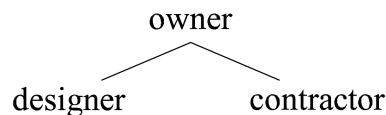


Figure 1: contractual relations in traditional process as well as in building team in Belgium

Building team

Working together in building team avoids the chronological fragmented organisation of the traditional building process and replaces it by a multidisciplinary coordination of design and execution (Breesch and Versele, 2009). All building professionals are involved from the very early beginning and contribute through sharing their knowledge on construction, this increases the buildability of the project. Risks and problems are detected by the multi professional team during the design phase, to avoid complications in execution. It is a more integrated way of organising the building process, although abroad this building team model is still categorised as a variant of the traditional method (Wamelink et al. 2010). This because the sharing of risks and responsibilities, costs and profits of IPD, which generates optimal involvement, ownership and stimulates whole life cycle thinking is not incorporated in this model. The contractual relationships remain unchanged (fig.1), caused by the legal incompatibility in the relationship between architect and contractor and the deontological requirement of total independence of the architect at all times. (Art. 6 Architectenwet, 1939) All stakeholders are involved from the very beginning, the rest of the process remains equal

to the traditional process. Nevertheless using building teams proved their use already in several projects in Belgium, mainly in industrial and office buildings and residential projects.

Traditional versus building team

Verheyen (2009) states: ‘traditional building is everything except a sustainable building process, after the project is executed we have to confess that every party’s concern was achieving as much as possible its own interests, being the budget for the owner, the creative concept for the architect and the profit to be made for the contractor’. This is everything but what the integration thought requires. (see paragraph 1) Timing, costs, quality and scope should be shared interests! ‘An ethical charter should be signed by all parties to outline the common goal of this temporary cooperation.’

From the chart Ceyssens (2008) drafted, it can be deduced that a 20% profit can be achieved in timing as well as in cost by working intensively together in building team compared to the traditional design-bid-build method.

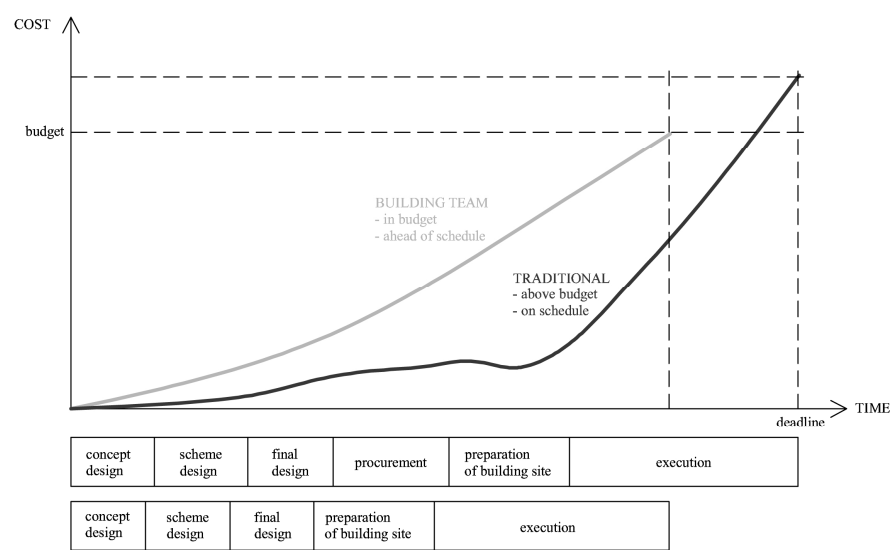


Figure 2: traditional versus building team (Ceyssens,2008)

Breesch and Versele (2009) argue that Belgium continues to work traditionally cause the building sector doesn’t obtain any administrative or legal support for working in building team. There’s an urgent need for a structured procedure together with a well thought through planning of this process. Parties continue working with unsuitable contracts of traditional building process, which of course creates disputes along the process. Bellens (2009) confirms that today parties apply the building team model by trial and error, there is a great deficiency of clearly formulated rules, manuals, standard contracts, documents, ...

Knowing that this is only a small step into integration compared to what our neighbouring countries intend to implement, Belgium should be able to systematize this better.

Interviews to define the problem

The three main building partners included in the interviews will be the clients, the advising architects and the contractors. The group of clients can be divided in public authorities and institutions, private institutions, companies, developers and private owners. For the advising architects the attention can be drawn to all individual architects or architects offices. Together

with the Board of Architects (a legal authority in charge of defining the statement of ethics for architects and guarding whether Belgian architects comply with this code) and the two major professional organizations for architects, NAV and BVA, it's possible to get a entire view on how the problems of traditional building is encountered on the architects' side. On the contractors' side, two main federations the Confederatie Bouw (federation of Belgian contractors) and more specific the FABA (federation of Belgian general contractors) could be a guide to find interesting co-operators for the interviews. Knowing that this target group is to vast, aiming for a more narrow scope is a must, a selection need to be made to continue the research.

The target group was narrowed down from an architect's point of view. As an architect I experienced the traditional building process in practice myself, therefore a focus on the architects first seemed a reasonable next step. The purpose of the first interview with the chairman and director of the NAV (largest professional organization for architects) was to get a clear picture on which type of architects offices suffer from which problems in the Belgian building sector. And subsequently analysing whether these problems were caused by the traditional way of building. The list of problems was long, going from never been able to deliver a project within the budget or on schedule to the unfair obligation for the architect to take a ten year professional liability insurance for each project, compared to the contractors who don't have any legal obligation in this matter.

Size matters

NAV statistics show that the type of problem suffered depends on the size of the office. Offices of 1 to 3 people struggle the most with the fact that in small scale projects in Belgium there is ascertained that the owner's search for an architect is not because he needs his advice but because of the legal obligation to work with an architect to get a building permission from the authorities. Those owners are only looking for a signature for the least payment. This attitude decreases the value of the architect's profession (Bellens, 2009a), but was shaped by the Belgian architects' act of 1939 and still in use, that protects the title and profession of architects. This act describes the compulsory services of the architect, containing: making the design, delivering the plans and documents for the building permission and periodically inspecting the execution phase on site, what created a monopoly status for the architect in Belgium. These offices apply the traditional building process cause it still suits well for small scale projects. According to Van der Heyden (2010) working in building team is an investment in time and energy, this need to be in balance to the benefit possible to make. For offices between 5 and 10 people the major concern is that they are not big enough to be able to invest in retraining their staff into a multi professional team, they have difficulties in coping with all the new regulation that is written according to sustainability and whole life cycle costing, energy efficiency, safety, ... The work package of the Belgian architect grew to a great velocity the last ten years. Creative designing only takes a small piece in the daily agenda of the architect, 52% of the architect's work package exists of administration. This, together with the increasing responsibilities and being the only building professional who is legally obliged to have a professional liability insurance, with the deep pocket approach as a consequence (owners will always try to involve the architect in construction disputes), leads to the following disturbing figures: 36,2% of Belgian architects consider a change of profession in 2009, compared to 25% in 2008! (NAV survey, 2009). The 'Wet Laruelle' (2006) encountered the heavy liability of a Belgian architect, what was called an explosive cocktail by Mrs. Body (2004), to some extent by offering architects the opportunity to practice their profession in a corporation with limited liability. But what still remains is that the owners are not aware of the overwhelmed work package of the architect, resulting in

difficulties in asking for extra remuneration. Informing the clients should be everyone's primary concern.

The search for the right focus group continued within the G30 (an association that represents recognized architects' offices in Belgium). The members of this association are the top of the Belgian building market, their portfolios comprise a great percentage of the major projects executed the last 15 years in Belgium. The main ideas that drive the G30 are: 'bringing together leading architecture firms in Belgium and represent them, promoting best practice in the field of architecture and urbanism towards clients and contributing to improve the conditions of practice of the profession in Belgium and Europe. Through the interviews within the G30 it became clear that these offices are ready to question the overall used traditional building process and are interested in the challenges of integration. Analysing their projects in the future will enable finding the right people on the clients' and contractors' side to meet.

Problem listing

As a result of the interviews a list of the most frequently occurring problems in construction projects according to the Belgian architect was drawn up. A division is made in problems caused by the fact projects appear through implementing a traditional building process and problems that don't have their roots in the traditional way of building but sure do have their influence on it.

Caused by traditional process

- Overruns in time and budget, underperformance in quality
- Low document quality for the bidding procedure
- Division in too many work packages > many bidding procedures > time consuming
- No transparency in cost/quality balance > fixed price
- No whole life cycle thinking
- Poor communication, no team work
- Low involvement > low ownership
- Risk averse attitude of everyone, no sharing in the risks
- Lack of trust and mistrust

Caused by other factors, but have consequences for the traditional process

- New regulations on sustainability, energy-efficiency, whole life cycle costing
- Heavy work package > lack in delegating
- Job hopping > project management changes > no relations of trust
- Unfair obligation of the professional liability insurance
- No ICT tools available at decent prices

The problems that returned in all interviews were the quality of the documents for the bidding procedure in traditional building processes. The scope and specifications of the project should be described enormously detailed for the contractor to understand every part of the construction, because he never saw the design before, this is time consuming. Alongside this the legislation concerning energy-efficiency and preserving the environment, and according to that the work package of the architect, is changing very quickly in Belgium. As a result the architect can almost not assure the owner that the documents delivered are complete. Secondly the architect often tries to shift some of the risks and responsibilities to the contractor by ordering special studies or research in the bidding, together with the construction contract becoming frequently fixed price, transparency in the prices disappears.

The contractor from his side is searching for the blanks or errors in the bidding documents, the selling unit of the different articles will go up and down depending on the commercial judgement of each contesting contractor, cause they can make profit out of it. They try to anticipate on the uncertainties of the studies made and the changes they expect the owner will ask for, e.g. articles which are likely to disappear will get a negative margin resulting in achieving a lower bidding price (Bovens, 2011). This created an enormous mistrust in the past up till now between clients and contractors. Clients experience the use of competition in the bidding procedure as the only way to ensure cost control. When it comes to choose between contractors, the client repeatedly decides to work with the cheapest one instead of the one with the best quality/cost combination. Finally a project is often divided in several work packages as: foundations, main construction, windows and doors, roof, finishing,... which means a bidding procedure for each individual package will be necessary. This takes much time in collecting and comparing prices, also in communication and managing during the building process. The more parties involved, the more information that can get lost during the execution, the more risks can occur. To conclude, there's often no existence of collaboration between the building partners. Which comprise the poor communication, the low involvement, the risk averse attitude, ... This unhealthy building environment has to be taken on!

Heard from IPD?

The interviewees that had foreign projects before knew of the existence of integrated project delivery, but none of them ever implemented it. This isn't too strange knowing that for instance in the Netherlands and the UK the majority of projects are still constructed through the use of traditional building processes as well.

When considering public assignments in Belgium like PPP-projects, what should represent that all building partners work together in a temporary venture to design, build, finance and maintain a project, partnerships are never established, it is only of a structured way of collaborating. The public CBO-procedure (Constructieve Benadering Overheidsopdrachten) resembles the design & build method, but again doesn't mean that designer and contractor share the responsibility and risks of these projects. These models are restricted in use because of the monopoly status of the architect in Belgium and together with that, the prohibition of a cooperation between architect and contractor because of the potential conflict of interests that would occur. Meaning that the Belgian architect, as an adviser and representative of the owner, at all times has to preserve his incompatible relation with the contractor, cause he can't control and work together with the contractor at the same time.

Support?

To the question whether architects felt supported in their search for solutions to the problems they experience in their profession, the answer was disappointing. Although all Belgian architects are obliged to register at the Board of Architects to provide their services, you would think they will be represented by them, like in many other European countries. Unfortunately none of the interviewees could enumerate a positive experience. Nevertheless the Board of architects should have an important role in promoting the profession and informing the sector for instance on new, more integrated building processes.

CONCLUSIONS

From the search for the applied processes in Belgian construction projects, the problems of the traditional building process and the little progress made through implementing building teams, the following can be deduced: 'Belgian architects aren't aware of the positive elements of integration yet.' What they do realize is that the loads of problems in construction today, make it impossible to guarantee a project being delivered within time, budget, quality and scope. Through the interviews a clear checklist of the problems arising was made, some relate to the traditional building process, some have an influence on it. Although Verheyen (2009) stated that time, budget, quality and scope should be shared interest, new enhanced ways of collaborating will be necessary to achieve this goal.

FUTURE CHALLENGES

After this exploratory phase, where the problems of the traditional building process from an architects' point of view has been analysed and how those problems emerge in the Belgian construction market, time has come to go through some case studies on G30 projects, to get into contact with the other building partners. Once the picture on how everyone involved in construction encounters the problems of the traditional building process is tangible, looking for solutions in building processes applied in our neighbouring countries can commence. Figure 3 illustrates the future steps, where the research is heading for in the coming years.

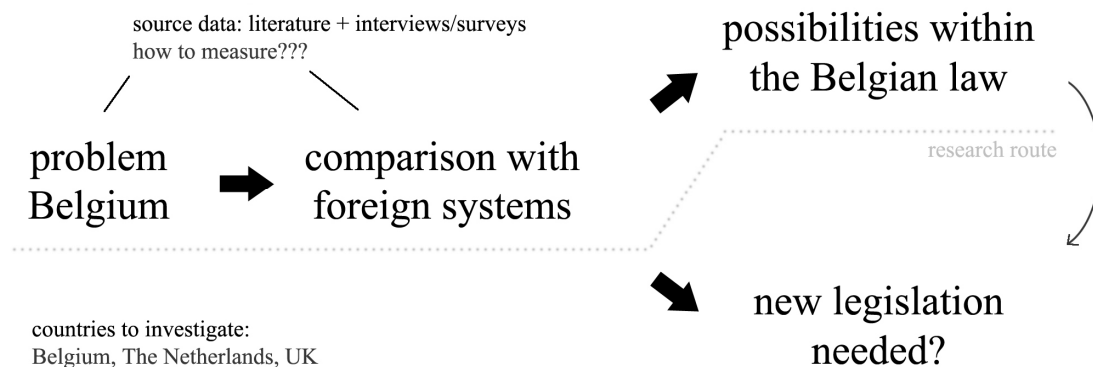


Figure 3: Research route

Comparison with foreign systems & possibilities within the Belgian law

Today integrated project delivery methods are used together with adjusted contracts to enhance the building processes in the Netherlands and the UK. They intensively use building teams, integrated contracts like design & build and turn-key, public private partnerships, alliances, SPE's, ... The restriction of the monopoly status of the architect in Belgium together with preserving at all times his incompatible relation with the contractor will be considered first. The following questions will guide the research in the future: 'Which future perspectives can Belgium have? What kind of integrated methods are successful in our neighbouring countries? Are there any possibilities to implement them within the Belgian legislation or is a profound revision inevitable? Will an evolution be enough or is a real revolution to be expected? ...'

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